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(08-93)

United States Government **Department of Energy**

memorandum

DATE: JUN 15 2002

REPLY TO ATTN OF: EH-52:Peter O'Connell:301-903-5641

SUBJECT: REAFFIRMATION WITH ERRATA OF DOE HANDBOOK, DOE-HDBK-1109-97, RADIOLOGICAL SAFETY TRAINING FOR RADIATION PRODUCING (X-RAY) DEVICES

TO: George Detsis
Technical Standards Manager, EH-24

On April 4, 2002, a notice of intent to reaffirm Department of Energy (DOE)-HDBK-1109-97 was sent to the DOE Technical Standards Managers. The notice requested comments regarding the planned reaffirmation. All comments have been resolved. With the issuance of this reaffirmation memorandum and errata sheet (attached), DOE-HDBK-1110-97 is now considered to be technically valid. The Office of Worker Protection Policy and Programs recommends reaffirmation with errata of the handbook in accordance with the Department's responsibility under the 5-year "Periodic Document Review" (Sunset Review) provision of the Technical Standards Program Procedures.

An electronic copy of the errata sheet and revised pages have already been sent to Ms. Amy Bush, Oak Ridge National Laboratory (ORNL), Technical Standards Program

If you have any further questions in this matter, please contact Mr. Peter O'Connell on 301- 903-5641 (or Peter.O'Connell@eh.doe gov).

Richard J. Black

C. Rick Jones
Director
Office of Worker Protection Policy
and Programs

Attachment

cc: A. Bush, ORNL

Radiological Safety Training for Radiation Producing (X-ray) Devices

Note: The page numbers refer to Change Notice 1 of the standard which was issued in February 2002 The changes have been incorporated in the Adobe PDF file posted on the DOE Technical Standards Web Site.

Page	Change
Instructor Guide - pg v, Module 101, H	Change "ACCIDENTAL DOSES" to "ACCIDENTAL EXPOSURES".
Instructor Guide - pg 3, EO9	Change "accidental doses" to "accidental exposures".
Instructor Guide - pg 9	Change "Rad, a measure of the energy absorbed per unit mass." To "Rad, a measure of the energy absorbed per unit mass. It is defined for any absorbing material."
Instructor Guide - pg 13	Change " ACCIDENTAL DOSES" to "ACCIDENTAL EXPOSURES"
Instructor Guide - pg 25	Change "(3 5 X 10^{-4}) x Z x E" to "(7 X 10^{-4}) x Z x E" Change "(3.5 X 10^{-4}) x 74 x 0.150 = 0.004" to "(7 X 10^{-4}) x 74 x 0.150 = 0.008" Change - "Then the energy transformed into X-rays would be 0.004 [7500] = 30 J/s. 1 J = 10^7 ergs, and 100 ergs/g = 1 rad. So this X-ray energy represents: 30 x 10^8 ergs/sec. If all this X-ray energy were deposited in 1 g of tissue, the dose would be: 3.0 x 10^8 ergs/sec [1 rad/100ergs/g] = 3 0 x 10^6 rad/sec." To - "Then the energy transformed into X-rays would be 0.008 [7500] = 60 J/s. 1 J = 10^7 ergs, and 100 ergs/g = 1 rad. So this X-ray energy represents: 6.0 x 10^8 ergs/sec. If all this X-ray energy were deposited in 1 g of tissue, the dose would be: 6.0 x 10^8 ergs/sec [1 rad/100ergs/g] = 6 0 x 10^6 rad/sec."
Instructor Guide - pg 37, Note	Change "accidental doses received" to "accidental exposures"
Instructor Guide - pg 39, iv	Change "accidental dose" to "accidental exposure".
Student Guide - pg v, Module 101, H	Change "ACCIDENTAL DOSES" to "ACCIDENTAL EXPOSURES"
Student Guide - pg 1, EO9	Change "accidental doses" to "accidental exposures".

Radiological Safety Training for Radiation Producing (X-ray) Devices

Page	Change
Student Guide - pg 3	Change "Rad, a measure of the energy absorbed per unit mass." To "Rad, a measure of the energy absorbed per unit mass. It is defined for any absorbing material."
Student Guide - pg 6	Change " ACCIDENTAL DOSES" to "ACCIDENTAL EXPOSURES"
Student Guide - pg 23, Note	Change "accidental doses received" to "accidental exposures".
Student Guide - pg 25, iv	Change "accidental dose" to "accidental exposure".
Student Guide - pg 15	Change "$(3.5 \text{ X } 10^{-4}) \text{ x Z x E}$" to "$(7 \text{ X } 10^{-4}) \text{ x Z x E}$" Change "$(3.5 \text{ X } 10^{-4}) \text{ x } 74 \text{ x } 0.150 = 0.004$" to "$(7 \text{ X } 10^{-4}) \text{ x } 74 \text{ x } 0.150 = 0.008$" Change - "Then the energy transformed into X-rays would be 0.004 [7500] = 30 J/s. 1 J = 10^7 ergs, and 100 ergs/g = 1 rad. So this X-ray energy represents: 30 x 10^8 ergs/sec. If all this X-ray energy were deposited in 1 g of tissue, the dose would be: 3.0 x 10^8 ergs/sec [1 rad/100ergs/g] = 3.0 x 10^6 rad/sec " To - "Then the energy transformed into X-rays would be 0.008 [7500] = 60 J/s. 1 J = 10^7 ergs, and 100 ergs/g = 1 rad. So this X-ray energy represents: 6.0 x 10^8 ergs/sec. If all this X-ray energy were deposited in 1 g of tissue, the dose would be: 6.0 x 10^8 ergs/sec [1 rad/100ergs/g] = 6.0 x 10^6 rad/sec."